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T.D.

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/940,686	09/30/97	RITZDORF	T

IM22/1003
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EXAMINER

LEADER, W

ART UNIT

PAPER NUMBER

1741

17

DATE MAILED: 10/03/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No. 68/940, 686	Applicant(s) Ritzdorf
Examiner William Leader	Group Art Unit 1741

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Response

A SHORTENED STATUTORY PERIOD FOR RESPONSE IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a response be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for response specified above is less than thirty (30) days, a response within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for response is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication .
- Failure to respond within the set or extended period for response will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

Responsive to communication(s) filed on _____.

This action is FINAL.

Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

Claim(s) 1-14, 16 and 17 is/are pending in the application.

Of the above claim(s) _____ is/are withdrawn from consideration.

Claim(s) _____ is/are allowed.

Claim(s) 1-14, 16 and 17 is/are rejected.

Claim(s) _____ is/are objected to.

Claim(s) _____ are subject to restriction or election requirement.

Application Papers

See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

The proposed drawing correction, filed on _____ is approved disapproved.

The drawing(s) filed on _____ is/are objected to by the Examiner.

The specification is objected to by the Examiner.

The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

All Some* None of the CERTIFIED copies of the priority documents have been received.

received in Application No. (Series Code/Serial Number) _____.

received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____.

Attachment(s)

Information Disclosure Statement(s), PTO-1449, Paper No(s). _____ Interview Summary, PTO-413

Notice of References Cited, PTO-892 Notice of Informal Patent Application, PTO-152

Notice of Draftsperson's Patent Drawing Review, PTO-948 Other _____

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Receipt of applicant's Request for Continued Examination, filed on September 14, 2000, is acknowledged. The amendment previously submitted has been entered. Claims 15 and 18 have been canceled. Claims 1-14, 16 and 17 are pending.

Independent claims 1, 5, 9, 13 and 16 have been amended to recite a method for processing a "microelectronic" workpiece. The term "microelectronic" does not appear in the specification as filed. The specification and original claims are directed to "semiconductor workpieces". Use of the term "microelectronic" rather than "semiconductor" to describe the workpieces is considered to introduce new matter

Claims 1- 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is not possible to determine what the actual structure of the recited semiconductor workpiece holder is. By reciting that the composition of the material plated onto the contact face is related to the material which is to be plated onto the semiconductor, the structure is based on a process step which occurs at some time in the future. This limitation is indefinite.

Independent claims 5 and 9 recite similar limitations.

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-8, 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yee et al (5,078,852) in view of the Lowenheim text *Electroplating and Poris* (5,723,028), all of record.

Yee discloses apparatus for use in electroplating metal onto a silicon wafer. Electrical contact is made with the wafer through cam assemblies 16 each of which includes an electrode finger. Electrical contact cams 28 which include the electrode fingers may be made of a metal such as titanium.

Applicant's invention differs from the teaching of Yee et al by reciting a plating layer on the electrode finger in the region where it contacts the substrate. Lowenheim discloses that it is known to electroplate metal onto a workpiece to impart specific properties such as wear resistance and conductivity (page 169). Lowenheim further discloses that electroplated gold layers are applied to electrical devices because of its good electrical contact properties, corrosion resistance, and because it will not "poison" semiconductor materials (page 269). Poris discloses that it is known to electroplate a metal such as copper, silver or gold onto a

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semiconductor wafer (column 3, lines 6-9).

The prior art of record is indicative of the level of skill of one of ordinary skill in the art. It would have been obvious at the time the invention was made to have electroplated a layer of metal such as gold, which is used to metallize a semiconductor wafer as taught by Poris, onto the cams of Yee et al because desirable properties such as improved electrical contact and avoidance of poisoning the semiconductor workpiece would have been obtained as taught by Lowenheim. Since Poris teaches the electrodeposition of gold onto a semiconductor and Lowenheim teaches the advantages of gold plating on electrical devices, the use of the same metal in the preconditioning of the electrical contacts used to supply electrical current to a semiconductor wafer during plating and in the plating step itself was clearly suggested. Claims 2 and 6 recite that the thickness of the plating layer is at least 0.1 microns. Provision of a thickness in this range would have been obvious to one of ordinary skill in the art because thicker plating layers would have provided improved durability during operation.

Claims 9-12, 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yee et al (5,078,852) in view of the Lowenheim text *Electroplating* and Poris (5,723,028) and further in view of Mayer et al (4,118,301).

Yee et al, Lowenheim and Poris are taken as above. Claims 9-12, 16 and 17 additionally recite that the plating layer applied on the electrode finger is copper

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and that copper is electroplated onto the semiconductor workpiece. As noted Poris discloses that it is known to electroplate copper onto a semiconductor wafer. See also column 4, lines 1-11. Mayer et al discloses the use of a copper sleeve on a spring workpiece holder in the region where the holder contacts the workpiece (figure 6 and column 7, lines 65-68).

It would have been obvious to have utilized copper as an electrode finger plating layer because it is known that copper provides a good contact surface with a workpiece being plated as shown by Mayer et al and to have deposited copper onto the semiconductor because Poris suggests the use of copper as a material for forming semiconductor metallization. One of ordinary skill would recognize that the use of the same metal on the contact region of the electrode finger that is electroplated onto the semiconductor workpiece would avoid the poisoning problem mentioned by Lowenheim since any metal transferred from the electrode finger to the semiconductor would be the same as that intentionally deposited. As in claims 2 and 6, claim 10 recites that the thickness of the plating layer is at least 0.1 microns. Provision of a thickness in this range would have been obvious to one of ordinary skill in the art because thicker plating layers would have provided improved durability during operation.

Any inquiry concerning this communication or earlier communications from

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the examiner should be directed to William Leader, whose telephone number is (703) 308-2530. The examiner can normally be reached Mondays-Fridays from 7:30 AM to 3:30 PM eastern time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kathryn Gorgos can be reached at (703) 308-3328. The fax phone number for *official* after final faxes is (703) 305-3599. The fax phone number for all other *official* faxes is (703) 305-7718. Unofficial communications to the Examiner should be faxed to (703) 305-7719.

Any inquiry of a general nature or relating to the status of this application should be directed to the receptionist whose telephone number is (703) 308-0661.

William Leader:wtl
September 29, 2000


Kathryn Gorgos
Supervisory Patent Examiner
Technology Center 1700